

REMARKS

Claims 25 and 27-48 are in the case and presented for reconsideration. Claims 1-24 and 26 have been canceled without prejudice. Claims 25, 27, 28, 29 and 40 have been amended. No new matter has been added.

Claim 25 has been amended in order to more particularly point out an apparatus for ablating tissue in an organ in a body of a subject comprising a probe which is inserted into the body so as to contact the tissue to be ablated at a desired position in the organ wherein the probe comprises at least one position sensor which measures one or more local parameters at the position prior to after ablating the tissue and a position sensor which generates signals for determining position and orientation coordinates of the probe; an ablation device which applies a given dosage of energy to the tissue so as to ablate the tissue; a display which displays a map of the organ; and a controller which determines the position and orientation coordinates of the probe using the signals generated by the position sensor and which generates the map (based on the one or more local parameters measured by the at least one sensor) and determines a predicted extent of ablation of the tissue to be achieved for the given dosage of energy and an actual extent of the ablation determined subsequent to ablating the tissue for comparison with the predicted extent using the position and orientation coordinates.

Claim 40 has been amended in order to more particularly point out an apparatus for ablating tissue in an organ inside a body of a subject comprising a probe which is inserted into the body so as to contact tissue to be ablated wherein the probe comprises a position sensor which generates an output indicative of a position and orientation of probe relative to the tissue with which the probe is in contact; and an ablation device which applies a given dosage of energy to the tissue so as to ablate the tissue; a display which displays a map of the organ; and a controller which computes position and orientation coordinates of the probe based on the output from the position sensor and a prediction of an extent of ablation of the tissue to be achieved for the given dosage of energy so as to enable the dosage to be adjusted responsively to the prediction using the position and orientation coordinates of the probe.

The support for these amendments can be found in the Applicant's Specification, for example, Page 14, Lines 11-15.

Claims 16, 17, 21-23, 25-28, 30-40 and 42-48 have been rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,575,969 (Rittman, III et al.). Claims 1-3, 6-14, 16, 17, 19-23, 25-40 and 42-48 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0109871 (Johnson et al.) in view of the teaching of Rittman, III et al. Claims 1-24 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,657,755 (Desai) in view of the teaching of Rittman, III et al. Claim 41 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Rittman, III et al. in view of the teaching of U.S. Patent No. 6,690,963 (Ben-Haim et al.). Claims 18 and 41 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Johnson et al. and Rittman, III et al. and further in view of the teaching of (Ben-Haim et al.).

Rittman, III et al. discloses a cool-tip radiofrequency thermosurgery electrode system for tumor ablation. In some embodiments of the Rittman, III et al. reference, the probe uses a sensor that senses temperature (Column 7, Lines 9-15) or is used in conjunction with an ultrasonic scanner for ultrasonic imaging (Column 17, Lines 34-50).

It is important to note that the Rittman, III et al. reference does not disclose or suggest the specific features and functions of Applicant's claimed present invention as amended. For example, Rittman, III et al. does not use any location system in conjunction with its probe, nor does Rittman, III et al. use a position sensor which generates signals for determining position and orientation coordinates of the probe such as found with the Applicant's claimed present invention as amended. Additionally, the system disclosed in Rittman, III et al. does not have a controller which determines the position and orientation coordinates of the probe using the signals generated by the position sensor nor a controller that generates a map showing predicted extent of ablation of the tissue to be achieved for the given dosage of energy and an actual extent of the ablation determined subsequent to ablating the tissue for comparison with the predicted extent (based on the one or more local parameters measured by the at least one sensor) while using the position and orientation coordinates such as found with the Applicant's claimed

present invention as amended. The same rationale applies to amended Claim 40 of the Applicant's present invention as to why Claim 40 (amended) is neither anticipated nor obvious in view of the teachings in Rittman, III et al.

Johnson et al. describes an apparatus for detecting and treating tumors using localized impedance measurement. As acknowledged by the Examiner, Johnson et al. fails to disclose a means to display a map of the predicted ablation of tissue for give applied dosage as well as a means to display the actual ablation in comparison to the predicted model. Moreover, Johnson et al. does not teach, suggest or even infer using a position sensor on the probe for generating signals indicative of the position and orientation coordinates of the probe and a controller which determines the position and orientation coordinates as found with the Applicant's claimed present invention as amended.

Desai discloses an apparatus and method for cardiac ablation. As acknowledged by the Examiner, Desai fails to teach providing an image including a predicted ablation image pertaining to a given dosage of ablation energy as well as a comparative actual ablation image.

Ben-Haim et al. discloses a system for determining the location and orientation of an invasive medical instrument. Although Ben-Haim et al. discloses use of a plurality of sensors that generate signals in response to fields in order to determine location coordinates and orientation coordinates of a point on its invasive medical instrument, the reference does not address in anyway the combination of the particular novel features and functions as set forth in the Applicant's claimed present invention as amended.

It is clear that Ben-Haim et al. fails to address the novel combination of a probe having at least one sensor which measures one or more local parameters at a position prior to and after ablating tissue in combination with the position sensor which generates signals for determining position and orientation coordinates of the probe in combination with an ablation device which applies a given dosage of energy to tissue in order to ablate tissue, in combination with a display which displays a map of the organ, in combination with the controller which determines the position and orientation coordinates of the probe using the signals generated by the position

sensor and generates a map showing a predicted extent of the ablation of the tissue to be achieved for the given dosage of energy and an actual extent of the ablation determined subsequent to ablating the tissue for comparison with the predicted extent using the position and orientation coordinates and based on the one or more local parameters measured by the at least one sensor.

There is no objective evidence that can be found in the teachings of Ben-Haim et al., Rittman III et al.; Johnson et al. or Desai that would indicate why a skilled artisan in the surgical navigation field would be motivated to combine these references in the various manners suggested by the Examiner. Thus, due to the clearly divergent teachings set forth in each of these references, there is simply no incentive for someone of ordinary skill in this field to modify the various apparatus described in these references in a way that could ever lead to Applicant's claimed invention as amended. Accordingly, these combination of novel features and function of Applicant's claimed invention as amended are simply not taught nor suggested by Ben-Haim et al. even when combined with the specific teachings of Rittman, III et al., Johnson et al. and/or Desai.

Therefore, by this Amendment, and for the reasons listed above, Applicant's claimed present invention as amended is neither anticipated by nor rendered obvious by the cited prior art references and favorable action is respectfully requested.

Respectfully submitted,

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